

- B15  
Cmold.
- 14. (Amended) A nucleic acid molecule according to claim 12 wherein  $\{n'_1 - - - n'_y\}$  comprises the nucleotide sequence substantially as set forth in SEQ ID NO:5 or is a nucleotide sequence having at least about 60% identity thereto or is capable of hybridizing thereto under low stringency conditions at 42° C.--

Please replace original Claim 22 with Claim 22, as revised:

- B16
- 22. (Amended) A peptide, polypeptide or protein according to claim 19 comprising an amino acid sequence substantially as set forth in SEQ ID NO:8 or an amino acid sequence having at least 60% identity thereto or a chemical equivalent, derivative, homologue or analogue of said peptide, polypeptide or protein.--

Amendments to the specification are indicated in the attached "Marked Up Version of Amendments" (pages i - x).

#### REMARKS

This Preliminary Amendment is being filed to provide the Sequence Listing data for the instant application and to make references to the Sequence Identifiers within the specification and claims of this application consistent with the requirements of the U.S. Patent and Trademark Office. No new matter has been added. A new set of claims, as amended, is enclosed herewith, for the convenience of the Patent Office.

Respectfully submitted,

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MARKED UP VERSION OF AMENDMENTSSpecification Amendments Under 37 C.F.R. § 1.121(b)(1)(iii)

Please replace the paragraph at page 1, line 26 through page 2, line 5, with the below paragraph, which is marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

The subject specification contains nucleotide and amino acid sequence information prepared using the [programme PatentIn] program FastSeq Version [2.0] 4.0, presented herein after the bibliography. Each nucleotide or amino acid sequence is identified in the sequence listing by the numeric indicator <210> followed by the sequence identifier (e.g. <210>1, <210>2, etc). The length, type of sequence (DNA, protein (PRT), etc) and source organism for each nucleotide or amino acid sequence are indicated by information provided in the numeric indicator fields <211>, <212> and <213>, respectively. Nucleotide and amino acid sequences [referred to in the specification are defined] which are defined in the Sequence Listing by the information provided in numeric indicator field <400> followed by the sequence identifier (eg. <400>1, <400>2, etc), are referred to in the specification as "(SEQ ID NO:1", SEQ ID NO:2, etc).[.]

Please replace the paragraph at page 5, lines 11 through 22, with the following paragraph:

Still another aspect of the present invention provides a nucleic acid molecule comprising a nucleotide sequence or complementary nucleotide sequence which is substantially as set forth in [<400>3] SEQ ID NO:3 or is a nucleotide sequence capable of [hybridising to <400>3] hybridizing to SEQ ID NO:3 or its complementary form under low stringency conditions or is a nucleotide sequence having at least 60% identity to [<400>3.] SEQ ID NO:3.

Please replace the paragraph at page 7, lines 11 through 19 with the following paragraph:

The terms "c35" and "35mer" are used interchangeably herein to refer to 35 amino acid domain juxtaposed to the membrane. When in soluble form, this peptide is referred to as soluble c35 or 35mer. The nucleotide and amino acid sequence of c35 are shown in [[400>7](#)] [SEQ ID NO:7](#) and [[400>8](#)] [SEQ ID NO:8](#), respectively. The term "29mer" refers to a truncated form of the 35mer. Six amino acids have been deleted from the C-terminal end. The nucleotide and amino acid sequence of 29mer are shown in [[400>11](#)] [SEQ ID NO:11](#) and [[400>12](#)] [SEQ ID NO:12](#), respectively. The present invention extends to isolated forms of c35 and the 29mer, to compositions comprising same and to genetic sequences encoding same.

Please replace the paragraph at page 10, lines 3 through 10, with the following paragraph:

The present invention arose in part following an investigation of the neurotrophin receptor, p75<sup>NTR</sup>, in its capacity as a death signalling protein. Although the p75<sup>NTR</sup> molecule comprises a putative death domain [9], in accordance with the present invention, this death domain is not directly associated with p75<sup>NTR</sup>-mediated cell death. Rather, a region adjacent, proximal or otherwise juxtaposed to the membrane domain of p75<sup>NTR</sup> is required for cell death. The nucleotide and corresponding amino acid sequence of the death domain [9] is shown in [[400>9](#)] [SEQ ID NO:9](#) and [[400>10](#)] [SEQ ID NO:10](#), respectively.

Please replace the paragraphs at page 16, lines 21 through page 17, line 17, with the following paragraphs:

Accordingly, another aspect of the present invention provides a nucleic acid molecule comprising a nucleotide sequence or a complementary form thereof wherein said nucleotide sequence is capable of [[400>1](#)] [hybridizing to SEQ ID NO:1](#) or a complementary form thereof under low stringency conditions, such as at 42° C.

The nucleotide sequence set forth in [[400>1](#)] [SEQ ID NO:1](#) is the cDNA sequence encoding p75<sup>NTR</sup>. The nucleic acid molecule according to this aspect of the present invention does not extend to the full length p75<sup>NTR</sup> cDNA sequence but comprises a portion which encodes an amino acid sequence which signals, induces or otherwise facilitates cell death when associated with a membrane portion of p75<sup>NTR</sup> or other molecules.

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Accordingly, another aspect of the present invention provides a nucleic acid molecule comprising a nucleotide sequence or complementary nucleotide sequence which is substantially as set forth in [ $\langle 400 \rangle 7$ ] SEQ ID NO:7 or is a nucleotide sequence capable of [hybridising to  $\langle 400 \rangle 7$ ] hybridizing to SEQ ID NO:7 or a complementary form thereof under low stringency conditions such as at 42° C or is a nucleotide sequence having at least 60% identity to [ $\langle 400 \rangle 7$ ] SEQ ID NO:7.

The nucleotide sequence set forth in [ $\langle 400 \rangle 7$ ] SEQ ID NO:7 is the death signal defined herein associated with p75<sup>NTR</sup>. This sequence encodes a 35 amino acid region also referred to herein as "c35". Truncated forms of c35 are also contemplated by the present invention such as a 25-30 amino acid molecules. One particular example is a 29mer which lacks carboxy terminal amino acids 30 to 35. As stated above, the present invention extends to palmitoylated c35 and its derivatives as well as molecules fused with molecules to facilitate membrane passage such as penetratin and the TAT protein from HIV.

Please replace the paragraphs at page 18, line 1 through line 8, with the following paragraphs:

The present invention further contemplates a nucleic acid molecule comprising a nucleotide sequence or a complementary form thereof, which nucleotide sequence encodes an amino acid sequence substantially as set forth in [ $\langle 400 \rangle 8$ ] SEQ ID NO:8 or a derivative, homologue or chemical equivalent thereof or an amino acid sequence having at least 60% identity thereto.

The amino acid sequence of [ $\langle 400 \rangle 8$ ] SEQ ID NO:8 corresponds to the amino acid sequence of the p75<sup>NTR</sup> death signal.

Please replace the paragraph on page 19, lines 8 through 13, with the following paragraph:

{n<sub>1</sub> - - - n<sub>z</sub>} is a sequence of z nucleotides comprising a nucleotide sequence substantially as set forth in [ $\langle 400 \rangle 7$ ] SEQ ID NO:7 or a nucleotide sequence encoding an amino acid sequence substantially as set forth in [ $\langle 400 \rangle 8$ ] SEQ ID NO:8 or a nucleotide sequence capable of [hybridising to  $\langle 400 \rangle 7$ ] hybridizing to SEQ ID NO:7 or a complementary form thereof under low stringency conditions such as at 42° C or a nucleotide sequence having at least 60% identity to [ $\langle 400 \rangle 7$ ;] SEQ ID NO:7;

Please replace the paragraphs at page 19, line 25 through page 20, line 2, with the following paragraphs:

Preferably,  $\{n_1 - - - n_x\}$  comprises the nucleotide sequence substantially as set forth in [ $\langle 400 \rangle 3$ ] SEQ ID NO:3 or is a nucleotide sequence having at least about 60% identity thereto or is capable of [hybridising to  $\langle 400 \rangle 3$ ] hybridizing to SEQ ID NO:3 or its complementary form under low stringency conditions such as at 42° C.

Preferably,  $\{n'_1 - - - n'_y\}$  comprises the nucleotide sequence substantially as set forth in [ $\langle 400 \rangle 5$ ] SEQ ID NO:5 or is a nucleotide sequence having at least about 60% identity thereto or is capable of [hybridising to  $\langle 400 \rangle 5$ ] hybridizing to SEQ ID NO:5 or its complementary form under low stringency conditions such as at 42° C.

Please replace the paragraph at page 24, lines 14 through 17, with the following paragraph:

Preferably, the peptide, polypeptide or protein comprises an amino acid sequence substantially as set forth in [ $\langle 400 \rangle 8$ ] SEQ ID NO:8 or an amino acid sequence having at least 60% identity thereto or a chemical equivalent, derivative, homologue or analogue of said peptide, polypeptide or protein.

Please replace the paragraph at page 25, lines 11 through 14, with the following paragraph:

"Analogues" encompass death signal containing peptides, polypeptides or proteins which are at least about 60% identical to the p75<sup>NTR</sup> death signal sequence [[ $\langle 400 \rangle 8$ ] SEQ ID NO:8], notwithstanding the occurrence of any non-naturally occurring amino acid analogues therein. "Analogues" also encompass polypeptide mimotypes.

Please replace the paragraph at page 25, line 31 through page 26, line 7, with the following paragraph:

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A homologue, analogue or derivative of [<400>2 or <400>8] SEQ ID NO:2 or SEQ ID NO:8 may comprise an amino acid substitution or said [<400> 2 or 8] SEQ ID NO:2 or SEQ ID NO:8 may encompass amino acid alterations in which an amino acid is replaced with a different naturally-occurring or a non-conventional amino acid residue. Such substitutions may be classified as "conservative", in which case an amino acid residue contained in a phospholipase inhibitory protein is replaced with another naturally-occurring amino acid of similar character, for example Gly Ala, Val Ile Leu, Asp Glu, Lys Arg, Asn Gln or Phe Trp Tyr.

Please replace the paragraph at page 25, lines 15 through 21, with the following paragraph:

The p75<sup>NTR</sup> protein is a transmembrane protein comprised of a large extracellular domain with four cysteine rich motifs responsible for interacting with soluble growth factors, and a short cytoplasmic, intracellular tail. The cytoplasmic domain does not contain a kinase domain but contains a domain with significant homology to a motif known as a "death domain" [<400>9, <400>10] SEQ ID NO:9, SEQ ID NO:10] found in apoptosis-inducing Tumour Necrosis Factor Receptors (TNFR) and TNFR-associating death-effector proteins [9].

Please replace the paragraphs at page 37, line 10 through page 39, line 20, with the following paragraphs:

The deletion mutants from the membrane distal end are as follows[:](SEQ ID NOS:13-42):

KRWNSCKQNKQGANSRPVNQTPPPEGEKLHSDSG;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEKLHSDS;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEKLHSD;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEKLHS;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEKLH;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEKL;  
 KRWNSCKQNKQGANSRPVNQTPPPEGEK;

KRWNSCKQNKQGANSRPVNQTPPPEGE;  
KRWNSCKQNKQGANSRPVNQTPPPEG;  
KRWNSCKQNKQGANSRPVNQTPPPE;  
KRWNSCKQNKQGANSRPVNQTPPP;  
KRWNSCKQNKQGANSRPVNQTPP;  
KRWNSCKQNKQGANSRPVNQTP;  
KRWNSCKQNKQGANSRPVNQT;  
KRWNSCKQNKQGANSRPVNQ;  
KRWNSCKQNKQGANSRPVN;  
KRWNSCKQNKQGANSRPV;  
KRWNSCKQNKQGANSRP;  
KRWNSCKQNKQGANSR;  
KRWNSCKQNKQGANS;  
KRWNSCKQNKQGAN;  
KRWNSCKQNKQGA;  
KRWNSCKQNKQG;  
KRWNSCKQNKQ;  
KRWNSCKQNK;  
KRWNSCKQN;  
KRWNSCKQ;  
KRWNSCK;  
KRWNSC;  
KRWNS;  
KRWN;  
KRW;  
KR; and  
K.

The deletion mutants from the membrane proximal end are as follows[:](SEQ ID NOS:43-72):

RWNSCKQNKQGANSRPNQTPPPEGEKLHSDSGI;  
WNSCKQNKQGANSRPNQTPPPEGEKLHSDSGI;  
NSCKQNKQGANSRPNQTPPPEGEKLHSDSGI;  
SCKQNKQGANSRPNQTPPPEGEKLHSDSGI;  
CKQNKQGANSRPNQTPPPEGEKLHSDSGI;  
KQNKQGANSRPNQTPPPEGEKLHSDSGI;  
QNKQGANSRPNQTPPPEGEKLHSDSGI;  
NKQGANSRPNQTPPPEGEKLHSDSGI;  
KQGANSRPNQTPPPEGEKLHSDSGI;  
QGANSRPNQTPPPEGEKLHSDSGI;  
GANSRPNQTPPPEGEKLHSDSGI;  
ANSRPNQTPPPEGEKLHSDSGI;  
NSRPNQTPPPEGEKLHSDSGI;  
SRPNQTPPPEGEKLHSDSGI;  
RPNQTPPPEGEKLHSDSGI;  
PNQTPPPEGEKLHSDSGI;  
VNQTPPPEGEKLHSDSGI;  
NQTPPPEGEKLHSDSGI;  
QTPPPEGEKLHSDSGI;  
TPPPEGEKLHSDSGI;  
PPPEGEKLHSDSGI;  
PPEGEKLHSDSGI;  
PEGEKLHSDSGI;  
EGEKLHSDSGI;  
GEKLHSDSGI;  
EKLHSDSGI;  
KLHSDSGI;  
LHSDSGI;



HSDSGI;  
SDSGI;  
DSGI;  
SGI;  
GI; and  
I.

Please replace the paragraph at page 44, lines 10 through 17, with the following paragraph:

Figure 6 shows that soluble c35 (35mer) [<400>7 and [<400>8]] (SEQ ID NO:7 and SEQ ID NO:8) protects cells from death signalling in a dose-dependent manner against membrane bound c35. Furthermore, the 35mer when expressed from a genetic construct, protected Schwann cells against NGF-induced death. c35 when expressed in soluble form can also protect cells against membrane bound c35. The inventors show in Figure 7 that soluble c35 can also protect against membrane-linked, expressed c35. A truncated form of c35, a 29mer, [<400>11 and [<400>12]] (SEQ ID NO:11 and SEQ ID NO:12) also protected against membrane-bound c35, when in soluble form.

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

9. (Amended) An isolated nucleic acid molecule according to any one of the preceding claims comprising a nucleotide sequence substantially capable of hybridizing to [<400>1] SEQ ID NO:1 or its complementary form under low stringency conditions.
10. (Amended) An isolated nucleic acid molecule according to claim 9 comprising a nucleotide sequence substantially as set forth in [<400>7] SEQ ID NO:7 or a nucleotide sequence capable of hybridizing to [<400>7] SEQ ID NO:7 or its complementary form under low stringency conditions or a nucleotide sequence having at least 60% identity to [<400>7] SEQ ID NO:7.
12. (Amended) A nucleic acid molecule comprising the nucleotide sequence:

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$$\{n_1 - - - n_x\}_b \text{ a } \{n'_1 - - - n'_y\}_c \text{ a } \{n''_1 - - - n''_z\}_d$$

wherein

$\{n_1 - - - n_x\}$  is a sequence of x nucleotides encoding an extracellular portion of a receptor or ligand-binding molecule;

$\{n'_1 - - - n'_y\}$  is a sequence of y nucleotides encoding a transmembrane peptide, polypeptide or protein or a molecule capable of inducing multimerisation;

$\{n''_1 - - - n''_z\}$  is a sequence of z nucleotides comprising a nucleotide sequence substantially as set forth in [[400](#)>7] [SEQ ID NO:7](#) or a nucleotide sequence encoding an amino acid sequence substantially as set forth in [[400](#)>8] [SEQ ID NO:8](#) or a nucleotide sequence capable of [hybridising to [400](#)>7] [hybridizing to SEQ ID NO:7](#) or a complementary form thereof under low stringency conditions such as at 42° C or a nucleotide sequence having at least 60% identity to [[400](#)>7] [SEQ ID NO:7](#);

b, c and d may be the same or different and each is 0, 1 or >1;

x, y and z may be the same or different and each is 0, 1 or >1;

a is a nucleotide bond;

wherein when c is 1 or >1 and d is 1 or >1 and wherein when the molecule is expressed in a neuronal cell, the expression product signals, induces or otherwise facilitates cell death.

13. (Amended) A nucleic acid molecule according to claim 12 wherein  $\{n_1 - - - n_x\}$  comprises the nucleotide sequence substantially as set forth in [[400](#)>3] [SEQ ID NO:3](#) or is a nucleotide sequence having at least about 60% identity thereto or is capable of [hybridising] [hybridizing](#) thereto under low stringency conditions at 42°C.
14. (Amended) A nucleic acid molecule according to claim 12 wherein  $\{n'_1 - - - n'_y\}$  comprises the nucleotide sequence substantially as set forth in [[400](#)>5] [SEQ ID NO:5](#) or is a

-X-

nucleotide sequence having at least about 60% identity thereto or is capable of [hybridising] hybridizing thereto under low stringency conditions at 42°C.

22. (Amended) A peptide, polypeptide or protein according to claim 19 comprising an amino acid sequence substantially as set forth in [<400>8] SEQ ID NO:8 or an amino acid sequence having at least 60% identity thereto or a chemical equivalent, derivative, homologue or analogue of said peptide, polypeptide or protein.